FOREST HEALTH PROTECTION
Pacific Southwest Region

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Pine Reproduction Weevil Damage in Ponderosa Pine Plantations
Bass Lake Ranger District, Sierra National Forest

On March 19, 2009 South Sierra Shared Service Area personnel (Beverly M. Bulaon, entomologist, and Martin MacKenzie, pathologist) were requested to evaluate mortality occurring in a small plantation on the Bass Lake Ranger District, Sierra National Forest. Mike Nolen (District culturist) pointed out dying individuals on the young ponderosa pine plantation and stated that some mortality had been noticed since last summer, but was more evident this past winter when numerous trees began fading en masse. Mike was familiar with damage caused by Pine Reproduction Weevil (*Cylindrocopturus eatoni*), and deduced this to be the same. The following report outlines identification and discussion and of factors that contributed to damage and mortality in the plantation.

Background

The plantation visited was located to the west of county highway 222, towards Bass Lake (UTM 11 S 0277546 4126500). Mike was unable to discern the size of the infested area, but he suspects that nearly 50 acres of plantation has been affected. A few dead trees could be seen across the road and over on the adjacent southern hillside. The plantation was initiated about five years ago, after the North Fork fire (2003?). Over XX acres were planted, and have been supplement planted for that past two years. Pines ranged in height from 2 to 4 feet tall, with fairly good terminal growth. White leaf manzanita (*Arctostaphylus viscida*), Buck brush (*Ceanothus cordulatus)*, and *Yerba santa* compose a majority of the brush species within the plantations. Despite some good spacing around pine seedlings, it was assumed that resource competition between brush and pine is fierce, especially understanding the huge water requirements of manzanita (see Figures 1 and 2).

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Figures 1 and 2. Photos taken from (North Fork) plantations showing the vegetation composition of brush in comparison to pine seedlings.

It was estimated that 20-30 pine seedlings per acre were killed within the past two years. Dead trees were not easy to find as most were obscured by the taller *Ceanothus* brush. Needles on live trees were damaged with puncture holes and discolored flecking (see Figure 3). Recently killed trees were turning red, and small coleoptera larvae was found under the bark. Emergence holes were found on older trees killed back in 2008, indicative of *C.eatoni*. Samples were taken back to the laboratory to rear out adults for confirmation. Black pineleaf scale (*Dynaspidiotus californica*), pine needle scale (*Chionaspis pinifoliae*), and weather flecking were also found on needles, but found in quantities of less than 1%. Based on the heavy vegetation density of the plantations and recent low winter precipitation, water and resource competition was most likely the predisposing factor of pines to *C.eatoni*.

Figure 3 (right). Emergence holes typical of *Cylindrocopturus eatoni* in wood of pine seedling. **Figure 4 (below).** Puncture holes from *C.eatoni* and weather flecking injury on pine needles.

According to Stevens (1971), maintaining vigorous growing trees and reducing stand competition is the most effective method to mitigating pine reproduction weevil populations. Removal of infested stems has been found to be ineffective as identification of affected trees is difficult, and weevils from neighboring stands will continue to attack if susceptible hosts are still available. Reducing overall tree stress and redistributing limited resources within the plantations will significantly reduce weevil risk. Treatment of competitive brush may be necessary to release pines and improve seedling resistance to attack.

If the district needs more information or has any further questions, please do not hesitate to contact Forest Health Protection personnel in Sonora.

/s/ Beverly M. Bulaon	/s/ Joel Egan	/s/ Martin MacKenzie
Entomologist	Entomologist	Pathologist

Reference:

Steven, R. 1971. Pine Reproduction Weevil. USDA Forest Service, Forest Pest Leaflet #15.